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**THE IMPORTANCE OF THE
DEVELOPMENT OF DIALECTICAL
THINKING IN THE MODERN
INFORMATION SOCIETY**

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Abstract

The article presents a critical approach to educational purposes stated in the Russian Federal Law on Education. The culture of thinking being in demand in a modern information society is opposed to a combination of knowledge, abilities and skills. There is a necessity for the educational process to be based on a dialectical approach to the world cognition and transformation.

Keywords: intellectual resource, dialectical logic, educational process.

1. Introduction

This article is evoked by the contradictions that have been revealed in the Federal State Educational Standards for getting a bachelor's and master's degree.

The first contradiction is between the necessity to form general cultural, general professional and professional competencies of a bachelor and master, as stated in the Standards, and the absence of methodical means in the arsenal of educational process. This way, the Federal State Educational Standards for all master's directions require, "A person who graduates with a master's degree must possess the following general cultural competencies (GCC): ability for abstract thinking, analysis and synthesis (GCC-1); readiness for taking actions in non-standard situations and for recognizing social and ethical responsibility for the decisions made (GCC-2); readiness for self-development, self-realization, and using

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creative potential (GCC-3)" [1]. The Federal Standard for agricultural engineering, for example, demands a developed skill of solving non-standard professional tasks as a general professional competency. All the competencies mentioned above, as well as the others included in state standards, obviously, require a skill of critical, i.e. dialectical, or rational thinking. However, none of the teaching programs and methods, which have been suggested so far, does not overcome this difficulty and the problem of getting a real professional education, along with forming a personality of high morality, has become theoretically unclear and hard to realize in practice.

As the world around us presents a system, so the processes, through which the world is reflected in our consciousness in the form of ideal images, primarily have exact reasoning and system. That is why the process of thinking can be viewed as an algorithm. None of educational standards contains the demand to empower a student with a means of thinking.

The second contradiction is between the essence of rational (integrated, systemic) thinking and metaphysical set of competencies in all federal state educational standards. This contradiction is the most fundamental one, touching upon the deep basis of the Personality's essence in all its manifestations. On the one hand, the society needs professionals with a set of competencies, but, on the other hand, we get a fragmentary personality, not able to see the system of interrelated processes and solve his/her problems under the changing circumstances. Hegel said, "It is hard to catch a fish standing in the water. You need to go on shore." [2] Dialectics is a science about the universal connection. Hegelian system is from the concrete to the abstract, and then backwards to the concrete, but on a qualitatively new level. A subject of cognition torn into competencies is not a mere abstraction. All educational subjects of any educational program consolidate this abstraction.

A person while claiming to be a thinking one should proceed from the abstract to the concrete, which is a sequential tracking of connection between particulars ("abstract" moments) objectively identified in the structure of the wholeness. This is what presents the movement from the particular to the general. This is the movement from an incomplete fragmentary reflection of the whole to the mutual connection. The adhesion of these particulars in the composition of some concrete definite whole is a synthesis of different parts. Nevertheless, there is no educational program with a course that could create conditions to form an organic inseparable unity of all these fragments (competencies). And this basis for

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systemic connection of all competencies and, therefore, for developing an intelligently thinking personality was made by the humanity long ago! It is dialectical logic in an organic unity with formal logic.

If a bachelor's level – with great reserve – can somehow allow dividing a personality into competencies, then a master's level with great responsibility is to form a complete, dialectically thinking personality, not denying competencies but - via crossing their quality limits - raising them to a qualitatively new level and providing them with a qualitatively new meaning.

In the modern age – the age of knowledge and information – an intellectual resource presents both a productive force and an inexhaustible powerful resource of the progress of civilization. In other words, the intellectual resource possesses a universal quality to be an impulse for the development of national, domestic and world systems. And this fact is acknowledged and supported by researchers and specialists engaged in a problem of the intellectual resource and its expanded reproduction [3]. In 1961, Theodore W. Schultz, an economist, laid foundations for the Human Capital Theory where he clearly justified the necessity of investing capital into expanded reproduction of knowledge, expecting the growth of intellectual return [4].

In connection with observable civilizational shifts, it is necessary to realize social functions of the educational institution to the full extent. Primarily, it is the systematization of knowledge for their effective transmission from one generation to the next.

2. Research methods

Our research is based on a dialectical approach which, with objective necessity, covers materialistic attitude to the truth and practice, systems approach, and modeling of multilevel systems on the basis of idealization and abstraction. It is dialectics, as a science about universal connection arising from contradictions, which works out a critical profound analysis of an object in question. Dialectical logic that exists in unbreakable organic unity with formal logic has never let down anyone.

The actuality and objectiveness of the research are proved by our interviewing of students and teaching staff. The survey questions are:

- (1) How do you understand the meaning of the word combination 'the culture of thinking'?
- (2) What is knowledge?
- (3) To succeed in life, what is more important – to know or be able to?

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(4) In your opinion, what does it mean to have a vocation for some activity?

3. A Dialectical Unity of Knowledge and Abilities

Modern technology has reached unprecedented paces of development, with all spheres of human activity being highly dynamic. It is evident that the modern information society calls not for a notorious skill that is set as an ideal of education but for a flexibility of thinking able to immediately assess a situation, i.e. to reveal the contradictions of a system and find solutions based on the laws of reasonable (dialectical) thinking.

Ability is an activity that is formed via repetition and bringing to automatism. An intellectual ability is automatic methods, ways of solving previously met mental tasks.

A skill proved to be essential in the time of manual and industrial production. With the change of historical conditions (science has become the main productive force) a skill has turned into its antipode – from a stimulus to progress into its hindrance. And this 'hindrance' as a public blessing is introduced in the Law on Education [5]!

The culture of thinking implies that skills and plasticity of thinking should be considered as a dialectical unity of opposites. The plasticity of thinking, while solving the contradictions of a stereotypical thinking and skills based on it, brings the human consciousness to a qualitatively new level. For example, the federal state educational standard of the higher professional education on the direction 080100.62 Economics in the context of general cultural competences demands of a person "... to be able to set a goal and choose ways to achieve it" [1], which is consistent with the demands for flexibility, plasticity of thinking. The flexibility of thinking is reflected in mobility of cogitative processes, ability to consider changing conditions of mental and practical activities and, therefore, change the ways of solving tasks. The flexibility of thinking is opposed to the inertness of thinking. A person of inert mind tends to reproduce what is learned, which is the result of non-productive thinking. The flexibility of mind is an obligatory attribute of a modern person. Accordingly, without a change in the mode of thinking, basic change of a subject's cogitative tool, a practical activity itself will not be efficient. Just knowledge, abilities and skills when being formed in a system and not given in aggregate are able to reflect the world adequately: nature, society and consciousness. We are in the early stage of the information society. We are anticipating problems that are even more global. A strategic crucial task is to maintain control over propagation of these new problems. Our time strongly claims for the development

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of a new type of scientific thinking aimed to the full at both the production of an innovation and evaluation of its negative consequences [6].

4. Reason as Modified Intelligence – the Essence of the Culture of Thinking

If we are interested in progressive development of economy, politics and other spheres of social life, then all subjects of the educational process must acknowledge a conceptual thesis that it is the formation of the culture of thinking that presents the essence of the educational process in its deepest foundations. In these circumstances, a notion of the culture of thinking requires serious and deep comprehension.

Specifically, abstract (rational) character of thinking is the basis for production of instruments of labour and therefore for transforming activity. However, to transform something one need to cognize the essence (the nature) underlying this transformation. Cognition is known to be divided into two levels: a sensitive one and a logical one (rational thinking).

The lower level of cognition is the intelligence; its highest level is the reason. The intelligence as a species-specific attribute is laid down as a foundation of consciousness and cognition in human brain by birth, i.e. by nature. However, just as every natural thing has an inherent possibility for "cultivation", so consciousness (nature) has grounds for its transformation. To transform consciousness means to transfer cogitative activity from the level of intelligence to the level of reason! Hence, cultural thinking is reasonable thinking. And if we really strive for forming a professional but not a smatterer, then we should reconsider the very essence of the educational process. The educational process should be based on the transformation of consciousness, i.e. raising the human thought from the level of intelligence to the one of reason [7].

So, if we undertake the task of building reason based on intelligence, then through the contents of any thingness we must enter into human subjectiveness widening its inherent potential abilities (intelligence/nature) to their logical limits and, thus, creating a universal ability to possess any thing (reason).

Intelligence captures only visible features of things, taking no notice of their nature, essence, descending to dogmatism, fixed, steady and "absolutely true" ideas of a thing, and to no less steady and unquestionable forms of their introduction into the consciousness of students.

5. The Actuality of Immediate Change of the Mode of Thinking in the Sphere of Education.

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Modern education worldwide is very distant from a real process of understanding information. As G. Hegel said as far back as the 18th century, "... we can play on words even without possessing a thing. But it is not only the word to blame, but full of drawbacks, indefinite and empty thinking. A transfer to thinking is.... the identity of reason and a mode of existence" [2].

Reasonable cognition penetrates into the nature, or the origin of a thing, capturing its essence. The world is perceived in an overall connection, in conformity with natural laws, general principles, which allows of free orientation in the world.

It is the sphere of education that particularly demands an urgent change of a mode of thinking, a basic change of a subject's cogitative tool; otherwise, a practical activity, which is so cared for by practice-oriented education, will be inefficient. An essential condition for the culture of mind is to learn how to produce a theoretical abstraction and hold within its certainty.

This way we will put an end to an eternal spell of our school where a real problem of knowledge, as knowledge of a thing, is substituted only with its external representation. And these dead facts are given to learners through our educational process, which results into degradation of general school and higher education and to a great public disappointment is stated in the Law.

If I do not understand the logic of things, then my actions will be senseless and harmful. To learn the logic of things (their essence) is possible only if mastering a dialectical method, which is the culture of thinking. The essence of any thing is in the unity of opposites that outwardly reveal themselves in a relation of a contradiction. Via solving a contradiction a new thing appears that is characterized with new qualitative features based on those ones of a previous thing.

If school in general, and higher school in particular, undertakes the task of forming creative thinking, such a way of knowledge movement inside human subjectiveness that has creative freedom not only inside the objective material space but also inside the historical being of this thing, then it, school, must be able to introduce into this way, introduce into knowledge that, firstly, is capable of self-movement, and, secondly, presents a wide (up to opposites contradicting each other) scale of abilities of this thing. It is clear that knowledge penetrating into inner abilities of a thing cannot be empirical, it must reveal and set its inner limits. It is also clear that a theoretical abstraction cannot be done without, and possessing it, in turn, cannot do without the understanding of its formation. An axiomatic approach to the matter does not solve the problem of abstraction, so it appears again sooner or later.

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That is why the educational process should see the certainty of abstraction not only in the sameness, which is best taken in by consciousness, but also in a contradiction, which is often not allowed by common sense and scientific consciousness. It can be easily shown that all original theoretical mathematical abstractions, for example, a number, a point, a line, a straight line, a circle, etc., contain contradictions and precisely through their solution, going over this limit are connected with each other. An academic process should draw abstractions from their objective nature, i.e. contradictions to things; otherwise they remain incomprehensible, and only formally mastered and assimilated.

6. Conclusions

In the process of our research on the given subject we interviewed the teaching staff of our university and revealed a certain pattern: the lecturers do not see the unity of dialectical thinking and the culture of thinking. Moreover, they interpret these notions narrowly, in the scope of their professional orientation. So, the lecturers in Law (Pavel and Zakir) perceive a general cultural competence of the culture of thinking literally as abiding to generally accepted laws and norms. The lecturers in Economics (Raisa and Tatyana) tried to give a definition to the notion of dialectical thinking, but they failed to apply it to the whole process of cognition, having concentrated only on economics, 'Economics is a science about solving contradictions between unlimited human needs and limited natural resources'. The lecturers in Mathematics (Elena and Vladimir) were not able to extrapolate the notion of 'number' to dialectical logic (the unity of quantity and quality), so they could not define the given notion. By the way, we arrived at the same sad conclusion while interviewing students: having studied mathematics for eleven years, they do not know what a number is, i.e. they do not understand the essence of the artificial language (formula, equation, and graph).

At the same time, we were pleased with the answer of the lecturer in Agricultural Engineering, Yuri, 'The culture of thinking and dialectical thinking are synonyms, it is thinking in accordance with the laws of logic'.

The majority of the second and third year students failed to answer our question about the culture of thinking. However, a group of students engaged into scientific research in the sphere of philosophy and possessing developed introspection fully realize the importance of education in the formation of the culture of thinking.

While being engaged into the research on the given problem for many years, we have analyzed students' graduation papers, their examination answers and work practice results, and

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career growth of our graduates. It enables us to draw a conclusion that the state of modern education needs to be immediately redeemed from formalism and all subjects of educational process must clearly realize the expediency of organizing the whole educational process on the basis of dialectical logic.

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